

part of Kings County, and is found also in Colchester. **KINGS COUNTY:** shady roadside gully, common, South Berwick; roadside swamp, Cambridge; roadside swale, Lower Canard. **COLCHESTER COUNTY:** roadside swamp, East Mountain, Prince No. 658.

GALINSOGA CILIATA (Raf.) Blake. Common weed, Lower Barrington Street, Halifax.

LAPSANA COMMUNIS L. A garden weed, Halifax.

HYPOCHAERIS RADICATA L. **YARMOUTH COUNTY:** a serious weed in fields and lawns about Yarmouth and Arcadia.

LITERATURE CITED

1. JACQUES ROUSSEAU, Notes floristiques sur l'est de la Nouvelle Ecosse. *Contrib. Inst. Bot. Univ. Montreal* **32**: 13-62. 1938.
2. M. L. FERNALD, The Gray Herbarium Expedition to Nova Scotia, 1920. *RHODORA* **23**: 89-111 etc. 1921.
Idem., Notes on the Flora of Western Nova Scotia, 1921. *RHODORA* **24**: 157-164; 165-180; 201-208. 1922.
3. GEORGE E. NICHOLS, The Vegetation of Northern Cape Breton Island, Nova Scotia. *Trans. Conn. Acad. Arts and Sci.* **22**: 249-467. 1918.
4. A. W. H. LINDSAY, Catalogue of the Flora of Nova Scotia. *Proc. and Trans. N. S. Inst. Nat. Sci.* **4**: pt. 2: 184-222. 1875-76.
5. HERBERT GROH and HAROLD A. SENN, Prunus in Eastern Canada. *Can. Jour. Res. C*, **18**: 318-346. 1940.
6. C. B. ROBINSON, Early Intervale Flora of Eastern Nova Scotia. *Proc. and Trans. N. S. Inst. Nat. Sci.* **10**: pt. 3: 502-506. 1902.
7. A. E. PORSILD, Miscellaneous Contributions from the National Herbarium of Canada, No. 1. *Can. Field Naturalist*, **54**: 54. 1940.
8. See *RHODORA* **24**: 205. 1922.

NOVA SCOTIA AGRICULTURAL COLLEGE,
Truro, Nova Scotia

NOTES ON JUNIPERUS¹

C. V. MORTON

RECENTLY Mr. V. L. Cory² has published a paper in which he describes, as a species, *Juniperus gymnocarpa* (Lemmon) Cory, based on *J. occidentalis* var. *gymnocarpa* Lemmon. He writes, "The characteristic feature of the mature fruit, which marks it as a distinct species, is that the solitary seed, which is large for the cone containing it, is exposed at the tip for as much as one-fourth or more of the length of the seed." He also states that ". . . in fully mature fruit it is obviously distinct from all other described junipers." The form discussed has been known

¹ Published by permission of the Secretary of the Smithsonian Institution.

² "Three Junipers of Western Texas." *RHODORA* **38**: 182-187. 1936.

since the time of Engelmann, and has been considered a form of *J. monosperma*.¹

However, the phenomenon mentioned is not unknown otherwise, being in fact one of the best known abnormalities in *Juniperus*. It was first reported about 100 years ago by Schnitzlein in his *Iconographia* (1843), and in the following year a similar form of *J. oblonga* M. v. Bieb. was described by Trautvetter² as a distinct genus *Thuiaecarpus*, with the single species *T. juniperinus*. It was soon recognized, however, that the exerted seed was not a generic character, or even a specific or varietal one, but a teratological condition. Accordingly, Trautvetter's plant was called *J. oblonga* var. *monstrosa* Antoine.³ Later on, Ascherson and Graebner called it *J. communis* lusus *thyiocarpos*.⁴

The same abnormality was reported in *J. flaccida* Schlecht., *J. mexicana* Cham. & Schl., *J. tetragona* Schlecht., *J. isophyllos* C. Koch, and *Sabina Grisebachii* Antoine by Antoine. Schlechtendal⁵ reported it in *J. communis* and *J. Sabina*. Parlato⁶ reported it in *J. procera* Hochst. and *J. phoenicea* L. Schröter⁷ named a similar form *J. communis* var. *nana* lusus *gymnosperma*.

In 1917 a study of this condition was published by Professor Beck v. Mannagetta,⁸ and he listed 16 species in which it had been observed. W. Kötter⁹ discussed it in his "Normale and anormale Fruchtbildung bei *Juniperus communis* L." The most recent treatment is by R. Florin,¹⁰ who found it in the Cuban species *J. saxicola* Britt. & Wils. Florin showed that this abnormal condition is caused by parasitic insects, probably of the genus *Eriophyces*. The observations of the author confirm this. All the exerted seeds examined lack an embryo and are filled with a mass of insect detritus. One of the species of insect causing these galls on United States species of juniper is *Erio-*

¹ *J. monosperma* forma *gymnocarpa* Rehd. Journ. Arn. Arb. 7: 239. 1926.

² Plant. Imag. Fl. Ross. Fasc. I-II. 11. pl. 6. 1844.

³ Cupress. Gatt. 24. pl. 35. 1857.

⁴ Syn. Fl. Mitteleur. 1: 245. 1897.

⁵ Bot. Zeit. 20: 405. 1862.

⁶ In DC. Prodr. 16, pt. 1. 1868.

⁷ Ber. Schweiz. Bot. Ges. 13: 116. 1907.

⁸ Sitzungsber. K. Akad. Wiss. Wien. Math. Naturw. Kl. 126¹: 403-419. 1917.

⁹ Dissertation, Hamburg, 1931.

¹⁰ Arkiv för Bot. 25A⁵: 11-13. 1933.

phyces ramosus Hodgk. (Bull. New York State Mus. **200**: 20. 1917.)

There is therefore abundant evidence that *J. gymnocarpa* Cory is not a valid species, but a monstrous form of *J. monosperma*. It has unfortunately been taken up recently by Prof. R. J. Preston¹ and assigned a range from Texas to Colorado, Utah, Nevada, and Arizona.

The nomenclature of the Mexican species of *Juniperus* is rather involved. *Cupressus sabinoides* H.B.K.² was briefly described from sterile material, with the suggestion that it might prove to be a species of *Juniperus*. This view was adopted by Sprengel;³ but in transferring the species to *Juniperus* he changed the name to *Juniperus mexicana* Spreng., a procedure quite justified by the practice of the time, because the name *Juniperus sabinoides* would be considered objectionable, *Sabina* being a synonym of *Juniperus*. However, by the present rules, the name was superfluous when published, and is therefore illegitimate. Later, the name *Juniperus sabinoides* Griseb. was given to an Old World species, so the specific epithet *sabinoides* is not available for the Mexican species. The proper name is, therefore, *J. tetragona* Schlecht.⁴ which was used by all authorities until recent times. The usually one-seeded form of central Texas and northern Mexico is a recognizable variety, *J. tetragona* var. *oligosperma* Engelm.

A second species was described independently in 1830 as *J. mexicana* Cham. & Schl., a quite different plant from *J. mexicana* Spreng. and belonging to a different group of species. This was renamed *J. Deppeana* Steud., which is erroneously cited by Standley⁵ as a synonym of *J. mexicana* Spreng. The true *J. Deppeana* is the species called *J. pachyphlaea* by Standley, at least in part. Whether *J. pachyphlaea* Torr. can be distinguished from *J. Deppeana* is very doubtful. It does not seem that it can be, but the question must be left in abeyance. The synonymy of these species may be summarized as follows:

JUNIPERUS TETRAGONA Schlecht. *Linnaea* **12**: 495. 1838.—

¹ Rocky Mountain Trees. 1940.

² Nov. Gen. & Sp. **2**: 3. 1817.

³ Syst. Veg. **3**: 909. 1826.

⁴ *Linnaea* **12**: 495. 1838.

⁵ Contr. U. S. Nat. Herb. **23**: 62. 1920.

Cupressus sabinoides H.B.K. Nov. Gen. & Sp. **2**: 3. 1817, non *J. sabinoides* Griseb. 1844. *J. mexicana* Spreng. Syst. Veg. **3**: 909. 1826 (illegitimate).—Range: Hidalgo, Durango, Mexico, Puebla, Chiapas, Guatemala.

JUNIPERUS TETRAGONA var. OLIGOSPERMA Engelm. Trans. St. Louis Acad. **3**: 590. 1877.—*J. occidentalis* var. *conjungens* Engelm. l. c.—Range: Central Texas, Chihuahua, Coahuila, Tamaulipas, San Luis Potosí.

JUNIPERUS DEPPEANA Steud. Nom. ed. **2**. **1**: 835. 1840.—*J. mexicana* Cham. & Schl. Linnaea **5**: 77. 1830, non Spreng. 1826. ? *J. pachyphlaea* Torr. U. S. Rep. Expl. Miss. Pacif. **4**: 142. 1857.—Range: Doubtful. The type was from Puebla, where the species is common. The extent of the range to the north depends on whether or not *J. pachyphlaea* may be distinguished as a species.

Juniperus monosperma (Engelm.) Sarg. is called *J. mexicana* var. *monosperma* by Cory, but I believe that it may be distinguished as a species. It is found in the southwestern United States; also in northern Mexico, in Chihuahua, Coahuila, and Zacatecas.

It seems probable that there are only 10 species of *Juniperus* in the United States, namely: *J. californica*, *J. communis*, *J. flaccida*, *J. horizontalis*, *J. tetragona*, *J. monosperma*, *J. occidentalis*, *J. pachyphlaea*, *J. utahensis*, and *J. virginiana*. The following are dubious: *J. megalocarpa* Sudw. (probably a variety of *J. utahensis*), *J. Pinchotii* Sudw., *Sabina silicicola* Small, and *S. multiova* Goodw. I have seen no material of *J. erythrocarpa* Cory, from western Texas.

Up until nearly the end of the nineteenth century *J. virginiana* L. was assigned a transcontinental range. Engelmann mentioned especially its interesting distribution. But in 1897 Sargent¹ segregated the western plants as *J. scopulorum* Sarg. He has been almost universally followed since, plants from west of about the 100th meridian being called *scopulorum* and those east *virginiana*. The only tangible difference given is that the western plants are supposed to mature their fruits in two years, the eastern in one year. Even if true, this difference is not necessarily specific. Moreover, examination of many specimens from the West seems to show that the western plants may also mature fruit in a single season. All needs of taxonomy are met

¹ Gard. & For. **10**: 420. 1897.

by calling the western plant *J. virginiana* var. *scopulorum* (Sarg.) Lemmon, and the interests of phytogeography are furthered thereby. The case is similar to that of *Prunus virginiana*, the western varieties of which have been segregated as distinct species, thereby obscuring to the general botanist their relationship.

U. S. NATIONAL MUSEUM, WASHINGTON, D. C.

A MONOGRAPHIC STUDY OF ARABIS IN
WESTERN NORTH AMERICA

REED C. ROLLINS

(Continued from page 325)

3. A. BLEPHAROPHYLLA Hooker & Arnott. Perennial; stems simple, one or few from a simple or closely branching base, pubescent with coarse, branching, appressed trichomes, rather more densely so above, rarely somewhat glabrous, 0.5–2 dm. high; basal leaves rosulate, numerous, obovate to oblanceolate, petiolate, obtuse, entire or dentate, pubescent on surfaces and margins with coarse forked or dendritic trichomes or the surfaces glabrous, 2–8 cm. long, 0.5–2 cm. broad; cauline few, ovate to oblong, entire or dentate, sessile but not auriculate, pubescent or glabrous on the surfaces, 1–2 cm. long, 4–10 mm. broad; pedicels erect, stout, pubescent, 5–10 mm. long; sepals pubescent, oblong, purplish, 6–8 mm. long, 2–3 mm. broad, outer pair saccate, inner pair non-saccate; petals rose-purple, broadly spatulate, usually retuse but sometimes merely truncate or rounded, 12–18 mm. long, 4–7 mm. broad; anthers apiculate; glands well-developed around single stamens, obsolete under paired stamens; siliques erect, glabrous, nerved to middle or above, 2–4 cm. long, 2–2.5 mm. wide; style stout when young, more slender on mature siliques, 1–2 mm. long; seeds orbicular, 1.5–2 mm. broad, narrowly winged, dark brown, uniseriate.—Bot. Beech. Voy. 321 (1840); Hooker in Bot. Mag. **33**: tab. 6087 (1874); Greene, Fl. Francis. 254 (1891); Watson in Gray, Syn. Fl. N. Am. **1**: 161 (1895); Jepson, Man. Fl. Pl. Calif. 428 (1925) and Fl. Calif. **2**: 62, fig. 136 (1936). *Erysimum blepharophyllum* (H. & A.) O. Ktze., Rev. Gen. Pl. pt. 2; 933 (1891).—Western California. MAP 2. CALIFORNIA: without locality, *Douglas s.n.* (G, isotype); Bodega Bay, Sonoma Co., March, 1902, *Heller & Brown 5178* (G, M, NY, P, US); Point Reyes, Marin Co., Feb., 1928, *Mason 4157* (R); April, 1932, *Ferris 8041* (P, UC); Sausalito, Marin Co., March, 1889, *V. K. Chesnut s.n.* (US); June, 1917, *Walker*